AK

ENVIRONMENTAL RESTORATION
RFCA STANDARD OPERATING PROTOCOL
FOR ROUTINE SOIL REMEDIATION
FY03 NOTIFICATION #03-06
IHSS GROUP 400-8

March 2003

DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE

CEX-105-01

Y16

ENVIRONMENTAL RESTORATION
RFCA STANDARD OPERATING PROTOCOL
FOR ROUTINE SOIL REMEDIATION
FY03 NOTIFICATION #03-06
IHSS GROUP 400-8

Approval received from the Colorado Department of Public Health and Environment

March 11, 2003

Approval letter contained in the Administrative Record

2

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 IHSS GROUP 400-8 1
2.1 Potential Contaminants of Concern 2
2.2 Project Conditions 4
2.3 RFCA Soil Risk Screen Evaluation 4
2.3.1 Action Level Comparison (Screen 1) 4
2.3.2 Potential Erosion Areas (Screen 2) 4
2.3.3 Subsurface Soil (Screen 3) 4
2.3.4 Groundwater Treatment (Screen 4) 4
2.3.5 Ecological Receptors (Screen 5) 4
2.3.6 Surface Water (Screen 6) 5
2.4 Remediation Plan 5
2.5 Stewardship Evaluation 8
2.5.1 Proximity to Other Contaminant Sources 8
2.5.2 Surface Water Protection 8
2.5.3 Monitoring 9
2.5.4 Stewardship Actions and Recommendations 9
2.6 Accelerated Action Remediation Goals 10
2.7 Treatment 10
2.8 Project-Specific Monitoring 10
2.9 Resource Conservation and Recovery Act (RCRA) Units and Intended Waste Disposition 10
2.10 Administrative Record Documents 10
2.11 Projected Schedule 11
3.0 PUBLIC PARTICIPATION 11
4.0 REFERENCES 12

LIST OF FIGURES

Figure 1 IHSS Group 400-8 Location Map 3
Figure 2 Potential Remediation Area 7

LIST OF TABLES

Table 1 Potential Remediation Areas for IHSS Group 400-8 1

3

ACRONYMS

AL	action level
AST	aboveground storage tank
BMP	Best Management Practice
D&D	Decontamination and Decommissioning
DL	Detection Limit
DOE	Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
ER	Environmental Restoration
ER RSOP	Environmental Restoration RSOP for Routine Soil Remediation
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
nCi/g	nanocurie per gram
OPWL	Original Process Waste Line
PAC	Potential Area of Concern
pCi/g	picocurie per gram
PCOC	potential contaminant of concern
PDF	portable document file
POC	Point of Compliance
POE	Point of Evaluation
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RISS	Remediation, Industrial D&D, and Site Services
RL	Reporting Limit
RSOP	RFCA Standard Operating Protocol
SRS	Soil Risk Screen
SVOC	semivolatile organic compound
UBC	Under Building Contamination
UST	underground storage tank
VOC	volatile organic compound
WRW	Wildlife Refuge Worker

4

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a) Fiscal Year (FY) 03 Notification includes the notification to remediate an Under Building Contamination (UBC) site and two Individual Hazardous Substance Sites (IHSSs) in the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA). The purpose of this Notification is to invoke the ER RSOP for IHSS Group 400-8 located in the southwestern IA. Activities specified in the ER RSOP are not reiterated here; however, deviations from the ER RSOP are noted where appropriate.

Soil with contaminant concentrations greater than the proposed RFCA Wildlife Refuge Worker (WRW) Action Levels (ALs), or as indicated by the Soil Risk Screen (SRS), will be removed with associated debris in accordance with RFCA and the ER RSOP (DOE 2002a).

The proposed remediation sites covered under ER RSOP Notification #03-06 are listed in Table 1, and the locations are shown on Figure 1.

Table 1
Potential Remediation Areas for IHSS Group 400-8

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Estimated Remediation Volume
400-8	UBC 441, Office Building	Radionuclides Metals Nitrate SVOCs VOCs	soil from beneath slab	> 1 cy
	IHSS 400-122, Spill associated with Tanks T-2 and T-3 [interconnected concrete underground storage tanks (USTs)]	Radionuclides Metals Nitrate SVOCs VOCs	soil	> 1 cy
	IHSS 000-121 – Tanks T-2 and T-3, [also includes a steel 3,200-gallon aboveground storage tank (AST) connected to T-3]	Radionuclides Metals Nitrate SVOCs VOCs	soil	> 1 cy

SVOC – semivolatile organic compound
VOC – volatile organic compound
cy = cubic yard

2.0 IHSS GROUP 400-8

IHSS Group 400-8 consists of UBC 441 and IHSSs 400-122 and 000-121, which are located at the southeastern corner of Fourth Street and Central Avenue in the IA Area. IHSS Group 400-8 is located approximately 1.3 miles east-northeast of the west guard gate. The footprint for Building 441 is approximately 17,075 square feet and overlaps IHSS 400-122, which is a spill associated with Tanks T-2 and T-3 located beneath the southern side of Building 441. Building 441 was placed into service as a laboratory in 1952. In 1966, the laboratory was converted into an office that included an addition on

5

the southern side of the building. The process waste drains and floor trenches were plugged or grouted during the 1966 strip-out of the building (RISS D&D, 2002b). This building addition was constructed over approximately 7.5 feet of Tanks T-2 and Tanks T-3 (DOE 1992 and 1996a).

The estimated total capacity of the Tank T-2/T-3 system is 12,000 gallons. The northern-most extent of the Tank T-2/T-3 system contains the wet well and limestone bed (neutralization tank) and has internal dimensions of 12 feet by 6 feet by 6 feet deep. The remaining Tank T-2/T-3 system consists of a 6,000-gallon holding tank with internal dimensions of 12 feet by 13 feet 4 inches by 7.5 feet deep. The tank system was foamed in-place using an inert closed-cell foam (polyurethane) in July 1996 (DOE 1996b).

2.1 Potential Contaminants of Concern

Potential contaminants of concern (PCOCs) at IHSS Group 400-8 are listed in Table 1 and were determined based on process knowledge and data collected during previous investigations (DOE 1992, 1996a, and 2002c).

6

2.2 Project Conditions

The following conditions are present at this site:

- Building 441 with a footprint of approximately 17,075 square feet;
- Tanks T-2 and T-3 (interconnected concrete USTs with an estimated total capacity of 12,000 gallons) located beneath the southern side of Building 441;
- Original Process Waste Lines (OPWLs) located beneath Building 441 and associated with Tanks T-2 and T-3; and,
- One steel 3,200-gallon aboveground storage tank (AST) connected to Tank T-3 is located on the southern side of Building 441.

2.3 RFCA Soil Risk Screen Evaluation

Current site conditions are evaluated to determine if remediation is required by the Soil Risk Screen (SRS). Some aspects of the SRS cannot be evaluated now, but will be evaluated after characterization.

2.3.1 Action Level Comparison (Screen 1)

Existing data indicate arsenic and lead are above the proposed WRW ALs (DOE, et al. 2002d), however only limited characterization data are available (DOE 2002c). The AL comparison will be reevaluated after characterization.

2.3.2 Potential Erosion Areas (Screen 2)

This IHSS Group is not considered an area subject to erosion and landslides in accordance with Figure 1 of the RFCA Modification (DOE, et al. 2002d).

2.3.3 Subsurface Soil (Screen 3)

Existing data will be reevaluated upon completion of further characterization.

2.3.4 Groundwater Treatment (Screen 4)

Current groundwater treatment systems do not collect groundwater from beneath this IHSS Group. However, potential groundwater contamination will be addressed through the IA Plume remedy.

2.3.5 Ecological Receptors (Screen 5)

Existing data indicate that lead is at concentrations above the proposed RFCA ecological AL, however only limited characterization data are available (DOE 2002c). The AL comparison will be reevaluated after characterization.

8

2.3.6 Surface Water (Screen 6)

The closest surface water POC is located approximately 1.4 miles east-southeast of IHSS Group 400-8. While there have been no elevated levels of surface water standards reported at this location, due to the distance between the IHSS Group and the POC it is unlikely that the IHSS Group is impacting surface water at the POC or elsewhere. In addition, the available soil data does not indicate that soil contamination is contributing to groundwater contamination in this area. The SRS will be reevaluated upon completion of further characterization.

Additional characterization data is required to complete the SRS analysis for Screens 1, 3, and 5. Upon receipt of characterization data gathered in accordance with IA SAP Addendum #IA-03-01 (DOE 2002c), a final accelerated action decision will be made to determine if soil removal is required, and if so, in what areas, consistent with the ER RSOP [or consistent with the specifications in section 2.4.]. Based on available information and the SRS analysis in this section, no additional soil removal will be required beyond the action levels and depths specified in ER RSOP Section 2.4.

2.4 Remediation Plan

This RSOP Notification remediation plan for IHSS Group 400-8 includes the following objectives:

- Remove the concrete slabs and caissons/footers within 3 feet of the ground surface. Recycle in accordance with the RSOP for Recycling Concrete (DOE 1999) or dispose at an appropriate facility (if not removed by Remediation, Industrial and Site Services [RISS], Decontamination and Decommissioning [D&D]).

- Flush and remove sanitary sewer drains (if not flushed and removed by RISS D&D).

- Remove the concrete USTs identified as Tanks T-2 and T-3 (if not removed by RISS D&D).

- Remove drains and piping within 3 feet of the ground surface (if not removed by D&D). Soil contaminated at concentrations above the proposed RFCA surface soil WRW ALs for plutonium and americium by any leaks from OPWLs within 3 feet of the ground surface will be removed to a depth of 3 feet. To minimize the risk of mobilizing and transporting contaminants into subsurface soil, flushing of the OPWL lines is not anticipated or required.

- Remove soil with nonradionuclide or uranium contaminant concentrations greater than the proposed RFCA WRW ALs to a depth of 6 inches. If uranium is present, remove one additional equivalent interval of soil.

- Remove soil with plutonium activity greater than the proposed RFCA WRW AL to a depth of 3 feet or to less than 50 pCi/g, which ever comes first. If concentrations are greater than 3 nCi/g between 3 and 6 feet, characterize and remediate pursuant to RFCA Attachment 5. If plutonium is present below 6 feet, conduct a SRS.

9

- If plutonium contamination continues below 3 feet, then the soil will be removed to less than 1 nCi/g or 6 feet, whichever comes first.

- If plutonium or americium contamination is not originating at the surface, remove soil with contaminant concentrations greater than 3 nCi/g over 80 square meters to less than 1 nCi/g.

- Consult with regulatory agencies if contaminant concentrations are greater than the proposed ecological ALs but lower than the WRW ALs.

- Collect confirmation samples in accordance with the Industrial Area Sampling and Analysis Plan (IASAP) (DOE 2001a).

It is anticipated that after remediation there may be areas with concentrations of metals, radionuclides, organics, and inorganics greater than background mean plus two standard deviations or detection limit (DL) or reporting limit (RL), but below RFCA ALs. The potential remediation area is shown on Figure 2.

2.5 Stewardship Evaluation

Based on the PCOCs (Table 1 and Section 2.1) and the ER RSOP (DOE 2002a), it is anticipated that all contamination above the proposed RFCA WRW ALs or as indicated through the SRS will be remediated. Figure 2 shows the potential remediation area. Additional remediation to below proposed RFCA WRW ALs or as indicated through the SRS is not required by RFCA, but will be evaluated using the consultative process.

Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the consultative process. A new map of residual contamination will be generated after remediation. The following sections present the stewardship evaluation.

2.5.1 Proximity to Other Contaminant Sources

IHSS Group 400-8 is located in the RFETS IA. The nearest IHSS, PAC or UBC is PAC 100-602, Building 123 Process Waste Line Break located approximately 20 feet to the south of PAC 400-122; IHSS 400-157.2 located approximately 50 feet to the south-southeast of IHSS 400-122; and UBC 123 and IHSS 100-148 located approximately 100 feet west of UBC 441. UBC 123 and IHSS 100-148 were remediated during FY02 and were proposed as NFA sites (DOE 2002e). See Figure 2 for the locations of these IHSSs, PACs, and UBC.

2.5.2 Surface Water Protection

Surface water protection includes the following considerations:

Is there a pathway to surface water from potential erosion to streams or drainages?

No. The Central Avenue Drainage Ditch is located approximately 100 feet northwest of Building 441.

Do characterization data indicate there are contaminants in surface soil?

Existing surface soil data from nine sampling locations within IHSS 122 on the southern side of IHSS Group 400-8 indicate that there is contamination in surface soil (DOE 2002c). Concentrations of arsenic and lead above the proposed RFCA WRW ALs were identified.

Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

The closest surface water POE is located approximately 0.7 mile northeast of IHSS Group 400-8. The closest surface water POC is located approximately 1.4 miles east-southeast of this IHSS Group. While there have been no elevated levels of surface water standards reported at either location, due to the distance between the IHSS Group and the POE and POC it is unlikely that the IHSS Group is impacting surface water at the POE or POC.

Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?

This IHSS Group is not considered an area subject to erosion and landslides in accordance with Figure 1 of the RFCA Modification (DOE, et al. 2002d).

2.5.3 Monitoring

Monitoring includes the following considerations:

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

There are no POEs or POCs near IHSS Group 400-8.

Can the impact be traced to a specific IHSS Group?

Not applicable.

Are additional monitoring stations needed?

Not applicable.

Can existing monitoring locations be deleted if additional remediation is conducted?

No, because no POEs or POCs are located near IHSS Group 400-8.

2.5.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group 400-8 are as follows:

- Use Best Management Practices (BMPs) to reduce erosion into surface water drainage.
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following:
  - Signs and barriers;
  - Restrictions on soil excavation; and
  - Soil excavations controlled through the Site Soil Disturbance Permit process.
- Implement long-term stewardship actions, including the following:
  - Federal ownership; and
  - Specific land use restrictions that will be discussed in the Site Long-Term Stewardship Plan.

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions.

2.6 Accelerated Action Remediation Goals

ER RSOP remedial action objectives include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;

2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and

3. Minimize the spread of contaminants during implementation of accelerated actions.

2.7 Treatment

Not applicable.

2.8 Project-Specific Monitoring

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations. Potential air sampling locations are shown on Figure 2.

2.9 Resource Conservation and Recovery Act (RCRA) Units and Intended Waste Disposition

Not applicable.

2.10 Administrative Record Documents

DOE, 1992, Historical Release Report for the Rocky Flats Plant, Golden, Colorado.

DOE, 1996a, Annual Update for the Historical Release Report, RF/ER-96-0046, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1996b, Completion Report for the Underground Storage Tanks Source Removal Project, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002b, RISS D&D Facility Characterization Historical Assessment Report, August.

DOE, 2002c, Industrial Area Sampling and Analysis Plan FY03 Addendum #IA-03-01, Rocky Flats Environmental Technology Site, Golden, Colorado, December.

DOE, CDPHE, EPA, 2002d, Proposed RFCA Modifications Rocky Flats Environmental Technology Site, November.

DOE, 2002e, Annual Update for the Historical Release Report for the Rocky Flats Plant, Golden, Colorado, September.

2.11 Projected Schedule

The projected schedule for remediation of IHSS Group 400-8 is the third or fourth quarter of FY03. The project is scheduled to last approximately 30 days.

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #03-06 activities will be discussed at the March 2003 ER/D&D Status meeting. A portable document file (PDF) version of this notification was provided to the local governments. This notification is available at the Rocky Flats Reading Rooms and on the EDDIE (Environmental Data Dynamic Information Exchange) website at www.rfets.gov.

4.0 REFERENCES

DOE, 1992, Historical Release Report for the Rocky Flats Plant, Golden, Colorado.

DOE, 1996a, Annual Update for the Historical Release Report, RF/ER-96-0046, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1996b, Completion Report for the Underground Storage Tanks Source Removal Project, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September.

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

DOE, 2002b, RISS D&D Facility Characterization Historical Assessment Report, August.

DOE, 2002c, Industrial Area Sampling and Analysis Plan FY03Addendum #IA-03-01, Rocky Flats Environmental Technology Site, Golden, Colorado, December.

DOE, CDPHE, EPA, 2002d, Proposed RFCA Modifications Rocky Flats Environmental Technology Site, November.

DOE, 2002e, Annual Update for the Historical Release Report for the Rocky Flats Plant, Golden, Colorado, September.

16/16

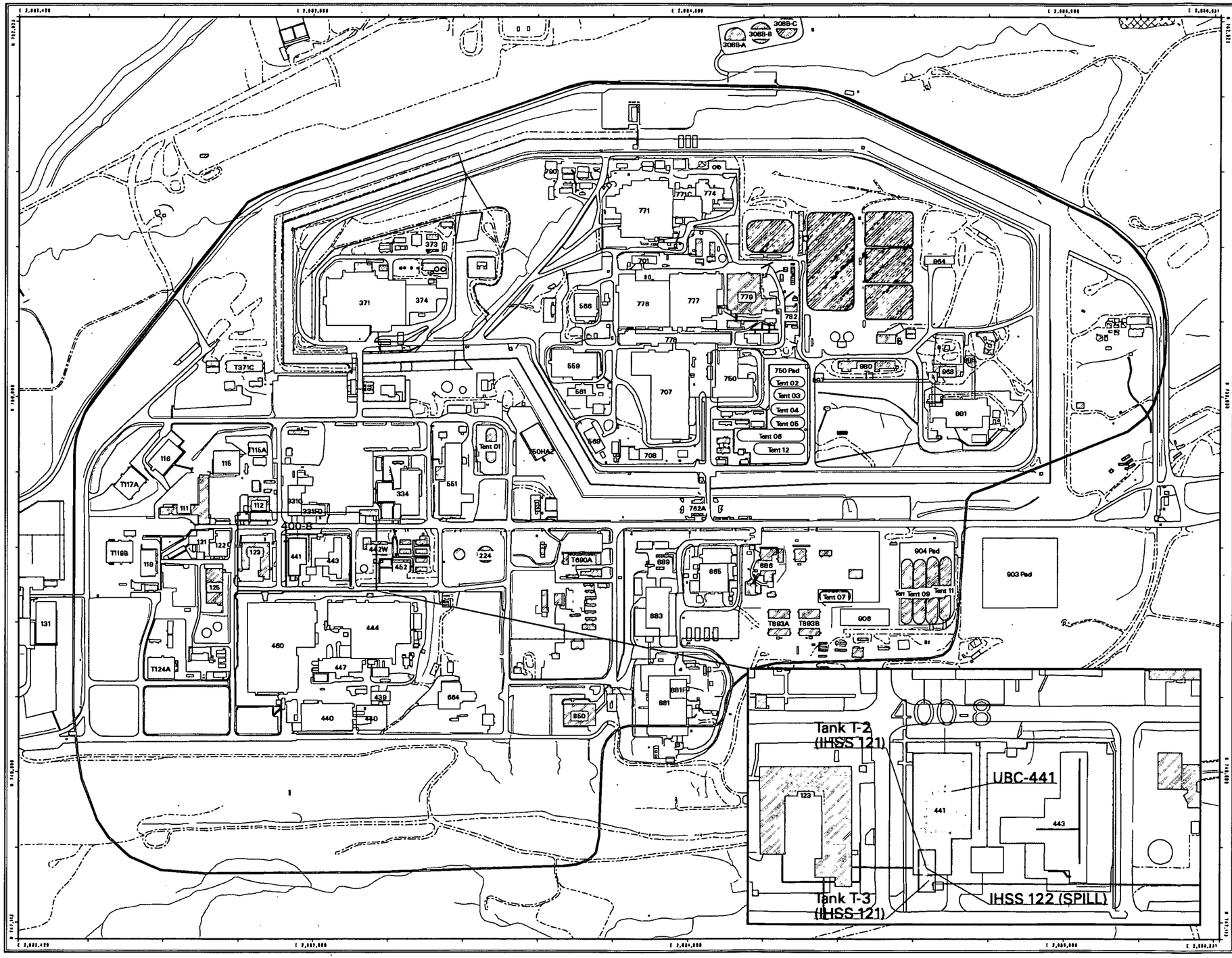

Figure 1

IHSS Group 400-8 Location Map

EXPLANATION

IHSS Groupings

- 400-8
- Foamed and Stabilized Tanks (Source Removed - Interim Status)
- Original Process Waste Lines (000-121)

Standard Map Features

- Buildings and other structures
- Demolished buildings and Other Structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads
- Industrial Area Operable Unit Boundary

DATA SOURCE BASE FEATURES:
PACs
Historical Release Report (HRR)
2nd Annual Update
Sept. 30, 1997
Individual Hazardous Substance Sites (IHSS)
DOE, 1992, HRR Report and Subsequent Updates.
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas.
Digitized from the orthophotographs. 1/95

Scale = 1 : 6330
1 inch represents approximately 528 feet

150 0 300 600ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

Prepared by: CH2MHILL Communications Group

Prepared for: KAISER-HILL COMPANY

March 11, 2003

NT_Svr w:/projects/ias/ia_group_mapsia_group_400-8_03-0303.eml

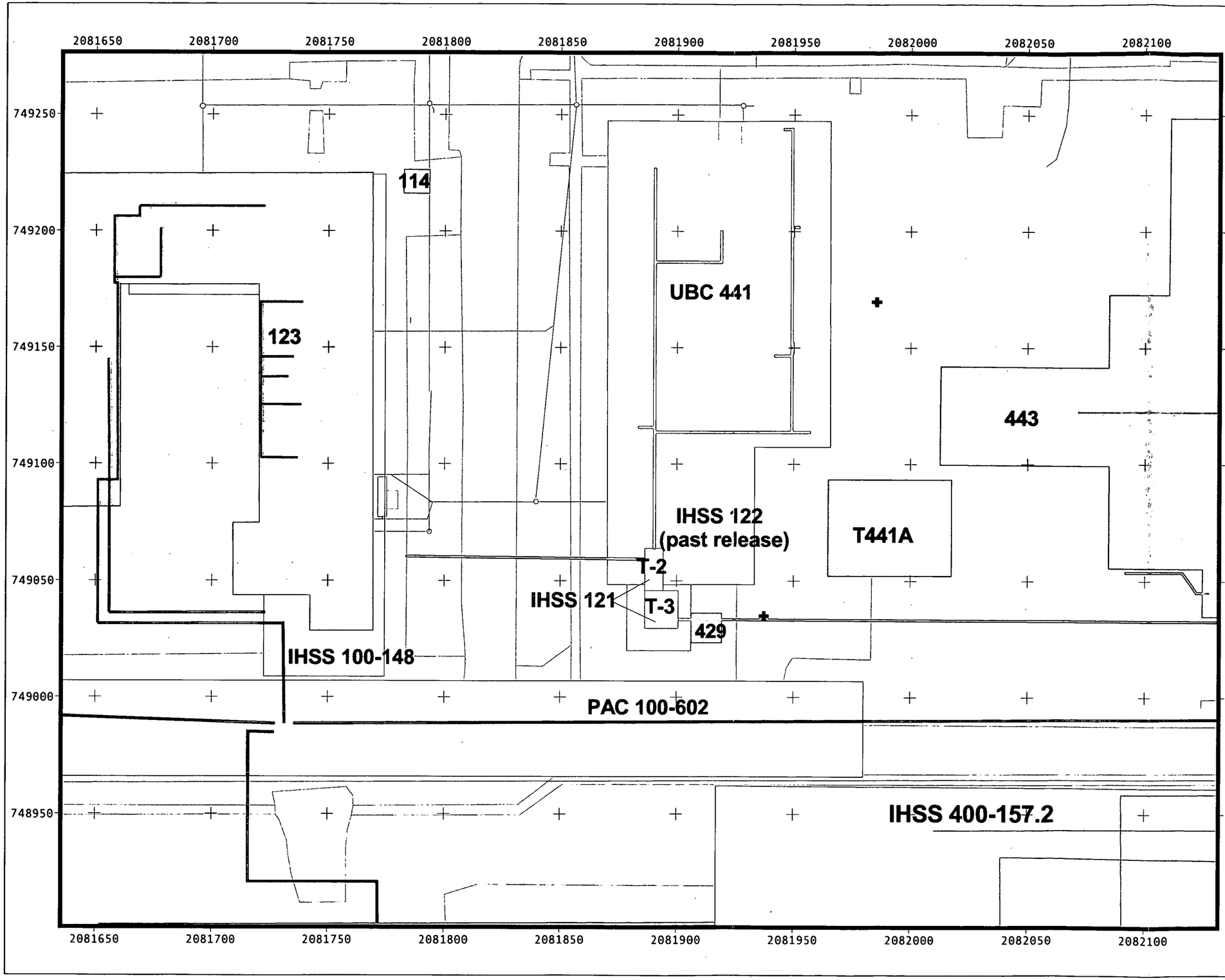

Figure 2
Potential Remediation Area
IHSS Group 400-8

KEY

- Potential Remediation Area
- PAC
- Tank
- Building
- IHSS
- OPWL
- NPWL
- Sewer Line
- Stream
- Paved Area
- Potential Air Sampling Location

N W E S

20 0 20 40 60 Feet

Scale = 1:500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: Date: 3.7.03

RADMS

Prepared For:

KAISER•HILL COMPANY

File: w:/projects/fy2003/400-8/notification/400-8 fig 2.apr

11